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CENTRAL INTELLIGENCE AGENCY  
**INFORMATION REPORT**COUNTRY Iran  
SUBJECT Road Conditions

25X1

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25X1

**1. Kerman to Zahedan**

From Kerman to Bam, the road is of graded gravel, wide enough for two cars to pass at high speed. No bad washes exist except one about 10 or 15 kilometers out of Kerman, which is caused by a dry river bed descending the left side of a low mountain. About half of the way is washboard and tends to throw the car badly. A speed of 50 to 65 kilometers per hour is possible.

From Bam to Nosratabad, the road is a perfectly flat desert highway, well graveled and with practically no turns, permitting very high speeds except at three points in the desert near the southern tip of the Lut. There sand dunes blow across the road. At noon a high wind came up and turned the desert into a sand storm. The sand was black and filled with gravel. The sun was darkened and the air became almost unbreathable. The wind came from north to south at speeds estimated at 65 kilometers per hour.

About 20 to 30 kilometers out of Nosratabad on the way to Zahedan, the road leaves the desert and starts to climb a continuous grade through a low pass. It runs along the center of a dried stream bed which, if filled with water, would probably destroy it and make it impassable.

The grade can be climbed by a loaded Chevrolet station wagon most of the way in second gear. There are no switchbacks or traverses. After passing the summit the road descends rapidly and later becomes well graded and wide with speeds of 90 kilometers possible. It meets with the Meshed Road about five kilometers before Zahedan. The part of the road from Kerman to Zahedan crossing the desert is paralleled by a three wire line with steel poles, which the British strung to India.

**SEE LAST PAGE FOR SUBJECT 2: AREA CODES**

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25X1

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- 2 -

CONFIDENTIAL

25X1

25X1

2. Zahedan to Birjand -(approximately 500 kilometers)

The road from Zahedan to Birjand passes through rolling country and crosses several wide washes caused by mountain rivers, all of which were dry when we were there despite the terrific rains in the Zabol Area. Between Zahedan and Sefidabeh there are one or two water crossings and a few hills of no consequence. From there on to Birjand, the road is almost perfectly straight, running up the left side of a beautiful series of valleys. It is wide, flat and very smooth. Speeds up to 105 kilometers per hour are possible. A few travelling tribes and several gendarme stations were noted. There were no habitations or towns. The valley, which is used for grazing of sheep and goats lies between snow-capped mountains.

3. Birjand to Meshed (Approximately 500 kilometers)

The road goes through two or three bad water passes immediately after leaving Birjand. This town is located on a hog back ridge in the middle of a flat valley lying between snow covered ranges. After the first two kilometers going out of town, the road becomes very good again, similar to that South of the town. After passing Qaen, the road crosses a section of the Kavir Desert. There a constant wind at right angles to the road from the west causes the sand to drift in wisps across the road. However, no large drifts are formed. The sand is white and extremely fine. High speeds across this section are possible up to Torbat Haidari. In the middle of this desert there is a river, with water, between 50' and 150' wide. It is spanned by a stone or concrete bridge, double width, permitting passing at high speed.

After leaving this desert, the road passes through grazing land and then small sections of cultivated land. Between Torbat-Haidari and Shah-Taghi, where this highway meets the Kishapur Road, are two or three passes, none with snow but with a soapy soil, a kind of volcanic gray-green with patches of red. Here the road is narrow, has bad switch backs and is probably dangerous in wet weather. There are no road crossings that I recall.

4. Tehran to Shahrud (382 Kilometers)

The road out of Tehran is only fair and not satisfactory for high speeds. It climbs through a low gap and comes out into a plain. A cut-off to Rey has been proposed. It would go across flat land and serve some proposed industries. However, there is no pressing need for its building, as through traffic would not move that way on account of a longer distance. The road across the plain is low and is subject to water difficulty. Relocation is being considered. From 33 to 40 kilometers from Tehran, a new section has been constructed. Seven bridges and 42 culverts are in this section. It is also raised, which helps very much.

About 77 kilometers from Tehran, the road enters a pass some 11 kilometers in length. The road winds back and forth over a stream which could easily interrupt traffic in a heavy storm. There have been plans to build a new road with several bridges which will enable traffic to continue without these interruptions. Emerging from this pass, the road comes onto a plain near Garmsar. This stretch showed signs of bad conditions caused by water. There were several fords and many washes.

Passing Semnan at 211 kilometers, the road struck off north of west for a pass in the mountain which ran north and south.

At 235 kilometers, the road dropped down into a gully and passed a tea-house. A new and shorter line has been located and partially constructed cutting off extra distance as well as a lot of rise and fall. A few kilometers further, the road goes over the summit and straightens out

CONFIDENTIAL

25X1

- 3 -

CONFIDENTIAL

25X1

25X1

considerably. So much so that 66 kilometers were covered in one hours drive before reaching Damghan at 321 kilometers. There were several dips east of Damghan but the road improved at 333 kilometers. Some more dips occurred at 360 kilometers. The rest of the road into Shahrud was fast.

##### 5. Shahrud to Meshed

The road for some 60 kilometers east of Shahrud was fair, permitting average speeds of 54 kilometers per hour. There are a number of dips that a better location would have minimized. An expensive overpass has been built over the railroad (yet to be finished) which was not all justified by the amount of traffic that will flow for sometime to come.

Considerable elevation is attained at Miamay. Climbing continues and the road becomes very winding before reaching a high plateau. At one point for a length of some three kilometers, the road runs for stretches through a dry river bed. A relocated line has already been graded. Beyond this plateau, the road drops down into the north end of the desert at Abassabad. Just beyond, the road crosses the delta of Abrisham Rud. The road follows an old route which crossed the river on an old arch bridge. While wet weather does not interfere too seriously with travel by animal, it completely disrupts travel by automobile. For a distance of 10 kilometers the road has a very poor foundation. It is not good even in dry weather. There are mountains just a short distance to the north and a good all weather relocation does not present any difficulties. A modern bridge would be the principal item of construction. After solid ground is reached, the road continues east with occasional soft spots until reaching Sabzevar. From that point, it heads straight northwest to a gap in the mountains. A new road has been constructed through this gap. The rise is evenly graded but the line is very crooked at times. Beyond the summit, the road is reasonably straight as it descends into the valley of the Qaleh-i-Mura at Sultanabad, where it forks. One road goes on over the mountain in a northerly direction to Quchan. The main road turns east toward Mishapur. The first section of some 22 kilometers is very winding with a great deal of rise and fall. This is due to following old trails. A new line, several kilometers shorter, is being constructed on a much better alignment and gradient. The road follows the valley, with several dips and fords that are troublesome in wet weather, to Mishapur. The presence of much vegetation and cultivation in this valley should make the year round situation better than at Abassebad.

Beyond Mishapur, the road starts to climb over better ground until it joins the road from the south (Zahedan). It then turns north over the easterly nose of the Binalud Mountains. The section from there into Meshed is the best of the whole road, permitting high average speeds. While dust slowed movement, clear weather permits hourly runs of over 60 kilometers. Most of this last section is on high ground, some of it riding a ridge, so that heavy rains do not seriously interfere.

The railroad touches at several points and the road should be relocated to eliminate grade crossings wherever practicable.

##### 6. Meshed to Torbat-Jam

At 39 kilometers south of Meshed, this road turns southeast on a fairly direct and reasonably level course towards the Afghanistan border (and Herat). There is but little traffic over this road and the surface is good for the amount of traffic. There are several dips and fords that should be stone surfaced and graded to permit better all weather operation. This valley is one of the best in Iran, there being much cultivation (both dry and irrigated). There is also a lot of grazing land as is evidenced by the large flocks of sheep and herds of cattle observed. Cattle can only be raised on

- 4 -

CONFIDENTIAL

25X1

25X1

better grade of grazing lands. Some 60 kilometers from Meshed, we stopped at Fariman, a model village constructed by the late Shah. There are good mill buildings that are idle by reason of loss of machinery. There are also good hotels and other buildings in the main square. It is an exceptionally pleasant place. It was designed to house 50,000 people and has only a fraction of that number. With such good surrounding farm lands, efforts should be made to realize more of the original plans made for this town. The transportation arteries are reasonably good enough to fit into this picture. The potentialities of this section are also prevented from being realized by the trickle of commerce that moves over the Afghan border. Though Afghanistan and Khurasan have generally similar economies, there is still the possibility of moving some of the exports and imports through Iran via this route.

7. Zahedan to Khash

The northern section of this road is in bad condition. Passing is possible for most of the whole length. There are no towns, only two posts and one house, between the two cities. Grading is generally fair except in and out of water courses. There are no bridges or culverts. Two small gardens and an active volcano were noted along this road.

8. Khash to Iranshahr (180 kilometers)

This road is a former camel track which was improved by military labor. Consequently, the alignment is probably 50% too long and in the wrong place for 90% of the length. No repairs were made after the floods of two or three years ago, so much of the alignment is not now in use. The road is narrow, very winding, with short steep gradients and no passing places. There are no culverts or bridges. The only habitations existing are at Karavandar. One date and one rice garden were noticed at this place. A ten kilometer stretch of this road lies in the bed of the Karavandar Rud and is dangerous and difficult. Good water is found at Karavandar, Iranshahr and Bampour. This road may eventually become part of the road from Zahedan to Chahbahar, if the port at Chahbahar is developed.

9. Iranshahr to Chahbahar

Some work has recently been done on this road but last years flood destroyed the parts of it which followed stream beds.

10. Teheran to Qum (140 Kilometers) Driving time: 2 hrs and 50 minutes

This road is a wide, two-lane highway, paved with asphalt, except for three short sections over low ridges of hills, where it has several sharp curves and steep grades. Presumably it is the highway department's intention to relocate these sections before paving - at least that is what should be done.

The asphalt pavement is breaking up in several places - most notably where the roadbed is not properly drained. These sections should be properly drained by the construction of suitable culverts and drain ditches, and all breaks in the pavement repaired at the earliest possible date, so as to guard against further damage to a fairly good road which has been built at a considerable cost. The approaches to certain culverts should be modified so as to relieve the humps and thereby improve the riding qualities of the road.

Evidently the highway department has no mechanical equipment for the maintenance of its highways. It is a waste of time and money to build new highways or improve existing ones, without having the necessary

CONFIDENTIAL

25X1

- 5 -

CONFIDENTIAL

25X1  
25X1

equipment to maintain them. Small breaks in a pavement soon lead to larger ones, and then to extensive destruction of pavement and roadbed.

Several small maintenance crews were observed along the route between Teheran and Qum, but they had only small hand tools to work with, and no available stock of material, such as crushed stone, gravel or asphalt.

There was considerable commercial automotive traffic observed operating this road. We met only 11 privately owned automobiles, 3 camels and 12 donkey caravans - the latter carrying mostly brush and roots for firewood.

We want to repeat that the damage to the paving, above referred to, should be repaired at the earliest possible moment, so as to avoid further destruction. The obvious need is for some mechanized equipment and paving material.

11. Qum to Kashan (108 kilometers - driving time: 2 hours and 15 minutes)

There is a double-lane metalled highway all the way, except for several short stretches, which were hardly wide enough for vehicles. The loose rock used for surfacing this road is gradually being worked off to the sides. We observed three maintenance gangs of four men each levelling off some of the bad corrugations and throwing the loose rock back on to the road. There was a lot of stock material (loose rock) distributed at various places along the highway, to be used for maintenance work. However, so long as this stone is not bound with a good clay or tar binder, little will be achieved by throwing it back on to the highway.

Very little commercial traffic was observed on this section - five buses and three trucks.

12. Kashan - Matanz - Moghba - Ardestan - Main (240 kilometers - driving time: six hours)

This section of 240 kilometers is designated as a two-line metalled highway, but it is generally in poor condition, with many short sections where it has only one vehicle lane. In many places the crushed stone topping has been scattered away by vehicles, and the bare ground exposed - particularly between Matanz - Moghba and Ardestan - a distance of 63 kilometers. This section needs extensive repairs.

Very little commercial traffic was observed - 2 buses and 4 trucks.

13. Main - Yazd (175 kilometers - driving time: 3 hours and 15 minutes)

The first 100 kilometers of this highway is in fair shape. It is two lanes wide, well stoned and fairly well ditched for drainage, but the loose stone is being scattered to the sides by the automotive vehicles. Some 40 kilometers of this highway (near Yazd) was covered in many spots with shifting sand. Four maintenance gangs (of one foreman and four men) were observed shovelling loose rock back onto the road. This is an important section of the normal route between Yazd and Isfahan, and it should be kept up in better shape.

A couple of road scrappers, some liquid asphalt and a couple of road rollers are needed

14. Yazd - Main (175 kilometers - driving time: 2 hours and forty-five minutes)

This trip was returning over the same section which had been covered the previous afternoon. Better driving time was made because the entire distance was covered in daylight, whereas a part of the southbound trip, of the previous afternoon, was made after dark.

Little commercial auto traffic was observed. Only five buses and five trucks were met, and two private cars.

CONFIDENTIAL

25X1

- 6 -

CONFIDENTIAL/

25X1

25X1

A very interesting irrigation project was observed about 50 kilometers, North of Yazd, at a place known as Ardilan. Yazd has a population of 60,000 and is a very interesting city.

15. Main - Isfahan (159 kilometers - driving time: 3 hours and 10 minutes)

This is a two lane, metalled highway. The section from Main to the summit of the first mountain ridge - a distance of about 35 kilometers - was in good condition, except for the loose stone. From this summit across the high plateau for a distance about 50 kilometers, the highway was in fair condition, except for a distance of about three kilometers where a creek crossed and recrossed it several times, without the benefit of culverts. Nearing Isfahan, we found the roadway badly corrugated for many kilometers and on entering Isfahan it was still worse - having been inundated recently by the Zayandeh River overflowing its banks. Three small maintenance gangs of four men each were observed en route.

Very little commercial traffic was seen - only two buses and ten trucks (four of which were Anglo-Iranian oil tankers). This section should also be better maintained because it is a part of the important Yazd - Main - Isfahan - Tehran route. It too needs some mechanized road maintenance equipment.

16. Isfahan - Shahreza - Abadeh (200 kilometers, driving time: 3 hours and 25 minutes)

The highway from Isfahan for a distance of 80 kilometers is graded to eight meters roadway, well drained and quite heavily stoned. The stone, however, is constantly being scattered towards the sides by the automobiles. Several maintenance crews of one foreman and four men were observed, shovelling the stone back to the center of the road - an almost useless effort at highway maintenance. A road scraper, some liquid asphalt, a tar sprinkler and a road roller are badly needed on this section to preserve the crushed stone and hold it in place on the road bed. Highway Director Molai accompanied us on this trip. He is quite a competent man.

The section from Shahreza to Abadeh (120 kilometers) was not of the same high character, but it was quite fair. There was one quite bad section through the village of Izadhash, and across a ravine. This section is to be relocated and rebuilt. The balance of the distance to Abadeh was well stoned but not as well graded. There were also several humps that should be cut down. The usual scattering of the stone and road corrugations were quite evident.

17. Abadeh to Shiraz (209 kilometers - driving time: six hours)

This section of the road is in worse condition than the road between Isfahan and Abadeh. The terrain is more rolling and in several places it is badly broken, necessitating numerous sharp curves and steep grades. The last 25 kilometers before reaching Shiraz was being relocated and rebuilt. All waterways were carried through well designed culverts; sharp curves were being eliminated and steep grades reduced. This work was being done with only hand tools. Road-building equipment is badly needed on this job.

18. Shiraz - Kazeroon - Dalaki - Bushahr (295 kilometers)

Time did not permit covering more than 87 kilometers of this highway between Shiraz and a point across the high pass - about 36 kilometers from Kazeroon.

The highway westward from Shiraz across the valley for a distance of 10 kilometers has been graded and stoned, but it is badly corrugated. From that point it rises rapidly for about 10 kilometers to the plateau, following a ravine with many sharp curves and steep grades. This section should

CONFIDENTIAL/

25X1

- 7 -

CONFIDENTIAL/

25X1

25X1

be relocated and rebuilt before improved or paved, because in its present location it cannot be made suitable for automotive traffic.

Across the plateau for a distance of 47 kilometers the road crosses numerous gulleys and creeks (most of which are not bridged) and it is poorly stoned, with no surplus material readily available.

At a point about 75 kilometers west of Shiraz the road starts over a high mountain ridge, with numerous very sharp curves and steep grades. The descent has the same characteristics. This section of about 12 kilometers over this ridge is not safe, nor can it be made safe in its present location for auto traffic. It should be relocated and rebuilt before it is improved or paved. Nothing but the most rugged trucks or jeeps can cross over it safely.

Aside from the Anglo-Iranian Oil Company's tanker trucks, little traffic except donkey caravans were seen along this highway. If the port at Bushehr is improved then the road between Shiraz and Bushehr will become one of the important routes into the interior of Iran, and it should be made a first-class highway.

19. Shahreza - Abadeh - Isfahan (489 kilometers, driving time: 8 hours and 20 mins.)

This was a return trip over the same route travelled on Friday, April 1st. We had, however, the advantage of a daylight inspection of the relocation work which is being done for a distance of about 20 kilometers north of Shahreza, over which we had passed the day before after dark. Considering that these men have nothing but hand tools, they are doing a fair job. There were several sizeable cuts and fills, and numerous approaches to new culverts - all of which work was being done with picks and shovels, and some small, two-men wooden trays for carrying material from the cuts and borrow-fits to the adjoining fills - a most primitive and expensive method. They did not have even a wheelbarrow for moving material.

The most obvious need for this district is some road building machinery - such as steam shovels, caterpillar tractors, scrapers, road rollers and dump trucks.

This section is a very important part of the route to Isfahan and Tehran. A total of 36 trucks and 13 buses were met between Shahreza and Isfahan. Five bus lines operate regularly between Shahreza and Tehran via Isfahan. The Anglo-Iranian Oil Company distributes its products over this road by trucks from Bushehr as far north as Abadeh, and southbound from Qum to Abadeh. Oil and petrol is brought to Qum by railroad in tank cars.

20. Isfahan - Dilijan - Qum - Tehran (440 kilometers - driving time: 8 hours.)

The road out of Isfahan is badly rutted for several kilometers. After leaving the city limits, the highway has recently been graded to a width of 8 meters; with newly constructed culverts for all waterways. The approaches to several of these culverts had settled more than expected. These should be built up again as soon as possible. The newly graded section had also been freshly stoned, but the stone was being scattered as usual by the auto traffic. From Isfahan, which has an elevation of 5,200 ft above sea-level, the road rose steadily to a plateau which had an elevation of about 6,200 which it traversed for a distance of about 50 kilometers. Then it crosses a saddle at an elevation of about 7,000 ft. Numerous small streams from the mountains to the northwest cross this section of the road, without the necessary culverts, and have washed out certain sections of it. From Dilijan, which has an elevation of 5,000 ft, the road drops to an elevation of 3,250 at Qum. This section has numerous curves and steep grades, and it should be rebuilt in several places before it is paved. This road is quite heavily travelled. We met 15 buses and

CONFIDENTIAL/

25X1

-5-

CONFIDENTIAL

25X1

25X1

33 trucks (mostly oil tankers) between Isfahan and Qum.

The road from Qum to Tehran is paved with asphalt and is the most heavily travelled road that we covered so far. We met 40 buses, 42 trucks on this road. The asphalt paving is broken in several places; and these should be repaired at the earliest possible moment so as to avoid further damage.

21. Tehran - Firuzkuh - Shahi - Bandar Shah (356 kilometers, driving time: 12 hours)

The road leading out of Tehran is paved with asphalt for about two kilometers and is in good condition. From there on it is a metalled, two lane highway for about 40 kilometers, with several curves and minor grades, and there it starts climbing the Elburtz-mountains. From Bunhain to Jaboon (another 40 kilometers) and for a short distance beyond, the curves become more numerous and sharper and the grades steeper, until the summit of the pass is reached at an altitude of about 7500 feet above sea level. Several creeks cross the highway without culverts or bridges, and some of these places are dangerous washes. From the summit to Firuzkuh, which has an elevation of about 6,400 feet, the road rises again for a distance of 20 kilometers to a second summit of about 7300 feet, then drops very sharply for a distance of 32 kilometers to Polesefid, which has an elevation of about 1900 feet. This section of the road has a number of dangerously sharp curves and steep grades. It is a single-lane dug-way, following a ravine, first on one side and then on the other. The creek washes over the road in several places, soaking up the roadbed and making it unsafe for travel, particularly in wet weather. This section should be relocated and rebuilt as soon as possible. It is heavily travelled - particularly by charcoal trucks. We met 77 of them between Tehran and Polesefid. Two of them had skidded off the road, and had had it blocked; and on a third occasion our car slipped off, and we had to be pulled back onto the road by a truck. From Polesefid to Zirab, a distance of 8 kilometers, the curves are not as sharp nor the grades as steep; then on to Shahi a distance of 39 kilometers, the road is fairly straight and without steep grades but badly corrugated in many places. From Shahi to Sari, Behshahr and Bandar Shah, a distance of 120 kilometers, the road is quite level and straight, but again badly corrugated.

The road from Tehran to Bandar Shah is probably the most important route between Tehran and the Southeast section of the Caspian littoral. It should be relocated in several places - particularly between Firuzkuh and Polesefid - and it should be materially improved in many other places. The character and scope of this work, however, is of such proportions that it should not be undertaken by hand tools. A complete line of heavy roadbuilding machines should first be obtained. In the meantime, the section over the two passes should be improved at once.

If the railroad could take over the transportation of the charcoal from that area to Tehran, it would remove a heavy burden from this highway. The heavy roadbuilding machinery for this project should consist of at least: one steam shovel; four heavy dump trucks; one bulldozer; one road scraper and one road roller. A low platform, heavy truck will also be required to transport the steam shovel, the bulldozer and the road roller from place to place.

CONFIDENTIAL

25X1



- 9 -

CONFIDENTIAL

25X1

25X1

22. Bandar Shah - Peshahr - Sari - Shahi - Babol - Babolsar (167 kilometers - driving time: 4 hours)

The return trip from Bandar Shah to Shahi and Girab was made by rail. From Girab back to Shahi and Sari, the trip was made by automobile as well as the trip on to Babol and Babolsar. The general condition of the highways between these towns is fair, except for ever present road corrugations and creeks spilling across the roadway at various places. The road bed should be raised at these points, and culverts built in place to take care of these washes.

The highway from Babol to Babolsar is through an area that is not much above the Caspian Sea level, and the soil is soft and wet. The road bed was paved with small-sized, round stones, and the surface was quite uneven. The riding qualities of this section could be materially improved by applying a thin coating of gravel and asphalt. Not many heavy trucks were observed operating over this section, but there were numerous buses and some personal cars. We were advised that the new hotel at Babolsar was a very popular place during the summer months and during the kharoz season.

23. Babolsar - Babol - Amul - Mahmudabad - Chalus - Shahsevar - Ramsar (231 kilometers - driving time: 5 hours and 30 minutes.)

The highway from Babol to Amul and Mahmudabad (75 kilometers) is in poor condition. It traverses a low-lying section, with a soft, wet subsoil and no readily available gravel or crushed stone. The result is a poor road, badly graded and drained. This section needs extensive reconditioning with a topping of asphalt-bound gravel or crushed stone.

From Mahmudabad to Ramsar (156 kilometers) the highway closely follows the Caspian Sea shore line. It is fairly well graded and graveled, with the streets through Chalus, Shahsevar and Ramsar paved with asphalt. Except for the addition of a few culverts to take care of certain washes, this section of road will need but a minimum of maintenance for the next two or three years. Very few commercial vehicles were met - only six buses and thirteen trucks. As more passenger cars are acquired by the people in this area, this highway will be used more and more, because it affords a delightful trip along the sea shore.

24. Ramsar - Lahijan - Koochisfahan - Resht - Pahlavi (157 kilometers - driving time: 5 hours)

The road from Ramsar to Rudisar, a distance of 49 kilometers, continues along the sea shore and except for a few washes and some corrugations, was in fairly good condition. From Rudisar to Lahijan, a distance of 30 kilometers, it leaves the shore and crosses the delta of Pai-i-Rud. This section of the road should be raised in many places and several additional culverts built before it is graveled or stoned. From Lahijan to Resht, a distance of 43 kilometers, the road crosses the delta of the Sefid Rud and, generally, it is in a poor condition. It needs several additional culverts. The roadbed should be raised and it should be protected by parallel-drainage ditches for practically the entire distance. These drainage ditches should be some distance away, so as to prevent seepage from the adjoining rice paddies to the roadbed.

CONFIDENTIAL

25X1

-10-

CONFIDENTIAL

25X1

25X1

After the roadbed has been raised, bridged and ditched, it should first be graveled and thrown open to traffic for at least one year so as to thoroughly compact the foundation before paving. The character of the soil is a blue clay - generally known as gumbo. It is a very difficult material to hold in place when it becomes water-soaked.

From Resht to Pahlavi, a distance of 35 kilometers, the road has been paved with asphalt several years ago but, largely on account of insufficient drainage, the paving was completely destroyed in many places, in one section for a distance of five kilometers. This is a vivid example of what happens to asphalt paving when a roadbed has not been properly drained nor thoroughly compacted before paving.

The road from Resht to Pahlavi and from Resht to Lahijan are heavily traveled by trucks and buses, and they should be rebuilt just as soon as the necessary roadbuilding machinery can be obtained. We met 22 trucks and 12 buses between Lahijan and Resht, and 15 trucks, 5 buses and 11 passenger automobiles between Resht and Pahlavi.

25. Resht - Rudbar - Kuhn Pass - Qasvin - Karaj - Tehran (333 kilometers - driving time: 8 hours)

This road was once paved with asphalt from Resht through the Sefid Rud delta (a distance of 35 kilometers) but the paving is practically destroyed. Again an example of insufficient drainage and insufficient grading before paving. From there the highway goes through the Sefid Rud gorge for a distance of about 50 kilometers. This section has never been paved. It is graded for a two-lane highway, and is in fair condition, except for several curves, pitches, washes and some rock slides.

At the junction of the Shah Rud with the Sefid Rud, the road crosses the latter and follows the former to the Kuhn Pass - altitude of about 5100 ft. above sea level. From the Pass to Qasvin, the road is again paved with asphalt, and it is generally in good condition except for a few breaks in the pavement and several washes. This road is very heavily traveled. We met 15 buses and 62 trucks between Resht and Qasvin.

At Qasvin this road joins the highway from Zenjan and from Hamadan to Tehran, and it is the heaviest traveled road that we have been on so far. We met 16 buses and 87 trucks between Qasvin and Tehran. The road is fairly well graded, and paved with asphalt. There are several small breaks in the pavement. These should be repaired at once so as to guard against further damage to pavement and roadbed. A small truck and portable tar kettle with fine gravel and some liquid asphalt is all that the maintenance crew requires.

26. Tehran - Qasvin - Takestan - Zanjan - Mianeh - Rostanabad - Tabriz (623 kilometers)

The road from Tehran to Qasvin (a distance of 140 kilometers) is paved with asphalt for an average width of eight meters and, except for some necessary roadside drainage, several needed culverts and considerable patching of holes, it is in good condition. This paving was done by the Iranian Government in several installments, extending back for almost 11 years.

The section from Qasvin to Takestan (a distance of 34 kilometers) was paved under the direction of the British Armed Forces in 1942 and 1943. Adequate roadside drainage and culverts were not provided, nor was the asphalt topping of sufficient thickness for a primary highway. Little if any paving maintenance was done and no repairs were made during the

CONFIDENTIAL

25X1

- 11 -

CONFIDENTIAL

25X1  
25X1

years from 1943 to date, April 1949. This paving is now so badly broken up that at least 20 of the 34 kilometers will have to be completely rebuilt. The remaining 14 kilometers can be salvaged if repairs are started immediately and completed this season.

From Takestan to Zanjan, a distance of 140 kilometers, the road is badly corrugated for the entire distance, and washed out in several places. It was macadamized at one time, but most of the crushed stone and gravel has since disappeared. This roadbed needs extensive roadside drainage, numerous culverts and a topping of crushed stone or gravel. The new material should be given an application of road oil, and then rolled so as to hold it in place. This section of the highway is also subject to extensive snow drifts during the winter season, particularly where it passes through cuts, which vary from one to three meters in depth and from 1/4 to 1 kilometers in length. These cuts should be protected by snow barriers; either a rock fence or a trench dug along the windward side of the highway, about 50 meters away from the road bed.

From Zanjan to Mianeh, a distance of 127 kilometers, the highway parallels the Iranian State Railroad in many places, crosses and re-crosses it several times. It also parallels the Zanjan River through the rocky mountain gorge about 20 kilometers east of Mianeh. This section was macadamized several years ago but most of the crushed rock and gravel has disappeared. It has numerous curves, grades and washes none dangerous - but they should be improved, the roadbed drained wherever water is trapped and then a topping of oil treated crushed stone or gravel applied and rolled. Snow barriers should also be built alongside all cuts.

From Mianeh to Tabriz, a distance of 176 kilometers, the road crosses over a high plateau for more than 100 kilometers, then it goes over the Shibli Pass at an altitude of 2080 meters, with seven hair-pin curves on the North side and five on the South side of the pass. This road needs extensive improvement all the way between Mianeh and Tabriz. It is heavily travelled and, until the railroad is extended into Tabriz, it is the principal route to and from the Azerbaijan Region. During the winter months, it is often snowbound as long as forty days at a time. It has numerous curves, grades and cuts that should be improved and protected before it is retopped with a suitable oil-bound macadam. The section over the Shibli Pass should be relocated for a distance of from 10 to 12 kilometers before topping. The present route, with its numerous hair-pin curves and steep grades, cannot be made safe for winter driving.

For a distance of about 30 kilometers, from Tabriz to the Tabriz City limits this road is presently being paved with asphalt by an independent contractor from Tehran. He is doing a fair job. We were advised that a similar contract for about 20 kilometers from Rostamabad toward the Shibli Pass had been left to another Tehran contractor, but he has not as yet begun work on this section.

As stated before, this road from Tehran to Tabriz is a very important highway, and it should be rebuilt in many places and improved generally from Qasvin to Tabriz at the earliest possible date. We met 41 buses and 151 trucks between those points on our outbound trip, and 36 buses and 187 trucks on our return trip.

CONFIDENTIAL

25X1

-12-

CONFIDENTIAL

25X1

25X1

27. Tabriz-Marand - Khoi and Return (310 kilometers)

The highway from Tabriz to Marand, (a distance of 70 kilometers) was built several [sic] years ago by the Russian Imperial Government, and its general alignment, grades and general condition is fair. Several culverts need to be lowered or the roadbed built up to meet the top of the culverts.

From Marand to Khoi, the highway passes along the Northern slope of the Meshou Mountains for a distance of 20 kilometers and the roadbed is badly washed out in many places. This section was relocated last year by the highway department, but construction work was not completed before winter weather set in. The new section had not been opened for traffic, so that no personal inspection of the work could be made, but we were assured by the Tabriz district highway director that adequate culverts had been provided for all waterways.

For the balance of the distance to Khoi, about 50 kilometers, the general alignment and the grades of the highway are fair, but several culverts and considerable roadside ditching is needed. The bridge over the Kusun River, just outside of Khoi should be replaced because it is of insufficient capacity and width to carry present traffic.

The 20 kilometers of new road should be given a topping of oilbound crushed stone or gravel seas to protect the soft roadbed. Ordinary maintenance will be sufficient for the balance as there is not much vehicular traffic on this road.

28. Tabriz-Maraghen-Miandoab (175 kilometers)

This is the principal southbound highway for Tabriz, and it is second only in importance to the Tehran highway. It passes between Mount Sakhend and Lake Rezaieh. It is an old road, and several years ago, it was paved for several long stretches for a width of five meters with cobble stones, varying from 8" to 16" in diameter. This construction makes a very firm foundation, but a miserable riding surface. The shoulders of this roadbed should be extended for an additional  $1\frac{1}{2}$  meters on each side, so as to meet the eight meter width of a primary road. These shoulder extensions should preferably be made by the use of similar cobble stones so as to have a foundation of uniform material before paving. One year after the shoulders have been extended a substantial topping of asphalt should be applied. Other sections of the road are macadamized with a water-bound macadam, and are in fair condition except for the ever present corrugations. We were advised by the Tabriz director of highways that the road from Miandoab to Saqiz was very similar in character to the preceding section.

It has been suggested by several highly responsible people that the highway from Saqiz to Divandareh, to Sanandaj to Kermanshah be rebuilt and paved so as to provide a first class, open the year around highway from the Kermanshah-Hamadan District to the Azarbaijan District. As there is now an asphalt paved road from Qasr-i-Shirin (the Iraq Frontier) to Kermanshah, Hamadan, Qasvin and Tehran, and another from Khorramshahr to Ahwaz to Hamadan (joining the paved road from the Iraq Frontier) it seems that the Kermanshah - Tabriz extension would be very desirable as it would keep together the entire Eastern Section of Iran from the Persian Gulf to approximately the Russian border.

CONFIDENTIAL

25X1

- 13 -

25X1

25X1

CONFIDENTIAL

29. Qasvin-Takestan-Avez-Hamadan (236 Kilometers)

The condition of the asphalt paving between Qasvin and Takestan (34 kilometers) has been described in detail in a previous report, and the reference to it in this memorandum is only for the purpose of emphasizing its deplorable condition, and the urgent need of rebuilding the major part, as well as trying to salvage the remainder by making immediate repairs and draining of the roadside water pools.

From Takestan southward, this paved road is relieved of the heavy Tabriz truck traffic, and it is in a relatively better condition up to the beginning of the Avez Pass. The overall distance of the Avez Pass is about 30 kilometers - 15 kilometers climb and 15 kilometers descent. The summit of this pass registered 2200 meters on an aneroid barometer. For a distance of about three kilometers each way from the summit, the highway is in a frightful condition. Everywhere are signs of heavy trucks having gotten off the road and plowed up the roadbed in their efforts to get back. We were advised by the division director of highways at Hamadan that this road had been completely blocked by snow drifts for 40 days last winter. It is the principal north-south highway between Khorramshahr-Ahwaz and Tehran, and it should be kept open the year round.

The road over the summit has to be regraded and repaved for a distance of six kilometers. At that time snow barriers, such as rock fences or deep trucks [sic] should be built along the windward side and about 50 meters away from the roadbed. Heavy snow removal equipment, such as heavy maintenance dump trucks and road scrapers with shears and noses attached, should be stored somewhere near the approaches to this pass during the winter months, so as to be readily available when a snow storm begins.

In addition to the necessity of reconstructing the highway over the Avez Pass there are several places where culverts should be built so as to avoid washes from spilling over the roadbed. Paving repairs should also be resumed at once. On the Hamadan District, asphalt paving repairs were begun late last Fall for the first time since this highway was paved in 1943. One 10 ton mixer, 6 trucks and 10 tar kettles were sent from Tehran to Hamadan, and about 50 kilometers of roadways were repaired. However, this work has not been resumed this spring; instead, the district director was instructed to fill the holes in the asphalt paving with clay and gravel. Such repairs can last but a very short time, and are largely a waste of time and materials.

As stated above, this is a very important and heavily travelled road. We passed 20 buses and 112 trucks between Qasvin and Hamadan. It should be kept in first class condition at all times.

30. Hamadan-Assadabad-Kermanshah-Sanandaaj (330 Kilometers)

The highway from Hamadan is paved with asphalt and, up to the beginning of the Assadabad Pass, is in fair condition, except for some urgently needed patching. There are several washes that should be eliminated by the construction of culverts. The road over the Assadabad Pass has several side hill cuts that become blocked by snow drifts during the winter months. Last winter this road was completely closed over the pass for 18 days. It is the principal highway from the Hamadan-Kermanshah District to the Iranian frontier town of Qasr-i-Shirin, and it should be kept open at all times. A couple of heavy trucks and a road scraper, ordinarily used for maintenance work during the summer months should be equipped with snow removal attachments, and kept near the pass during the winter months for use during storms.

CONFIDENTIAL

25X1

-14-

CONFIDENTIAL

25X1

25X1

From Hamadan to Sanandaj the highway was built as a water-bound macadam road. Much of the crushed stone and gravel has been wasted away by automotive travel and washes. It is also badly corrugated. From Sanandaj to Divandareh and Saqiz, a distance of 205 Kms., the road was not open for travel and its condition could not be determined, but it is an essential link of the proposed Kermanshah-Tabriz primary highway.

We have been urged by many well informed people that the construction of a first class highway between Kermanshah and Tabriz should be given the first position on the list of new roads to be built. It would provide a direct route from the Hamadan-Kermanshah District to the Azarbaijan region, thereby shortening the distance of the present route via Takestan and Qasvin by more than 200 Kms. It should be given serious consideration.

31. KERMANSHAH-KANGAVAR-NAHAVAND-MALAYER-ARAK- (260 Kilometers)

Our trip from Kermanshah to Kangavar (66 kilometers) was over the paved road between Hamadan and Kermanshah travelled the day before and the condition of this section was described in that report.

From Kangavar to Nahavand, a distance of 60 kilometers, the highway was in a miserable condition. It has been macadamized years ago, but evidently little maintenance has been done since. We saw no men at work on this road for the entire distance of 60 kilometers. In several places the roadway was so rough that all trucks and cars took to the adjacent fields, and had already established a trail-way paralleling the main road. From Nahavand to the junction of the paved road between Burujird and Malayer (32 kilometers) the highway is in somewhat better condition but still badly corrugated. This route would be a short cut for southbound traffic from the Kermanshah area to the Burujird-Ahwaz-Khorramshahr district and as such it should receive some consideration, but the expense involved in making it a first class road is considerable and therefore should not be placed near the top of the priority list.

From Burujird to Malayer our trip was over the principal north-south paved highway. The condition of the pavement over this section was good.

From Malayer to Arak, a distance of 98 kilometers, the highway had been macadamized several years ago, and has since been fairly well maintained, although badly corrugated in many places. This section forms an important link from the central Hamadan-Kermanshah district to the State Railroad at Arak. It should be paved as soon as possible, as well as an extension thereof from Arak to Qum. Another very desirable development for this section would be the improvement of the road from Azua to Isfahan. Work on this section was started last year but it was stopped in the fall on account of a lack of funds.

32. Tehran-Karaj-Nessah-Challus (193 Kilometers)

This route goes over the Tehran-Kazvin asphalt paved road from Tehran to Karaj-a distance of 41 kms. From Karaj it follows the Karaj river. For several kilometers ravine through which the river flows is open, and the highway is in good condition. As the road progresses toward the summit, the ravine become narrower, until finally it is an Alpine gorge with steep mountain peaks on both sides. Shortly after having passed Nessah and about 5 kms. before reaching the Kandevar Tunnel, we found the highway completely blocked by an avalanche of snow which had slid down the evening before. This body of snow was at least 125 meters long and 10 meters high. Only ten men with small hand shovels were at work removing it. We were advised that with the help of an additional 100 men which had been sent for the snow would be removed in from 3 to 4 days.

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This highway had already been blocked for 110 days this winter by snow drifts and snow slides. The adjoining mountain peaks are utterly bare of any trees or shrubs, which might hold the accumulation of snow fall in the winter seasons. Several snow sheds have already been built between Nessah and Kandevan Tunnel, many more are required. Most important of all is the need of some snow removal equipment such as heavy dump trucks with shears attached and at least one rotary snow plow. These should be stored in or about Nessah during the winter months so as to be readily available when snow begins to fall. Nessah has an altitude of 2100 meters and from there to the Kandevan Tunnel, the road rises an additional 300 meters.

This is presently the shortest route from Tehran to the Caspian littoral, and it is heavily traveled. There were at least 150 trucks stalled on this highway by the snow slide of April 27. These trucks were loaded with fresh vegetables, livestock and charcoal for Tehran. They were on the narrow dug-way between the tunnel and the snow slide, and could not turn around nor back up on account of the narrow road, steep grades and sharp turns. We were told that the fresh vegetables would be a total loss, and that some of the livestock would die. This road should be kept open the year around. The roadbed is generally in fair condition, and it is scheduled for pavement with asphalt by the Asphaltting Department within the next year or two. We approve of that plan.

33. Tehran-Rudehen-Shahi-Babol-Amul-Haraz Road (193 kilometers)

On this trip we endeavored to determine the advisability of completing the Haraz River road from Amul southward across the Alborz Mountains, and to join the Tehran-Firuzkuh-Shahi road at Rudehen, about 45 kilometers east of Tehran.

The road from Tehran to Rudehen has been described in a previous report. It is fairly well engineered and macadamized two-lane highway on which considerable work has been done in recent years in the way of eliminating many short curves and steep grades.

From Rudehen to Abali and unto the summit, a distance of 25 kilometers, the road is a dug-way alongside of fairly open ravine. It is not used very much above Abali because of no traffic, and its maintenance has been neglected for some time. This road is not passable at present beyond the summit.

We tried to explore this road from the northern or Amul end, but could not get beyond 24 kilometers from Amul on account of recent washouts. The construction of this road was ordered by Shah Reza in 1941, and for about two years the work was pushed vigorously. With the abdication of Shah Reza, the work was stopped. As there are no villages more than 20 kilometers above Amul, and as there are very few inhabitants along the route of this highway, its maintenance has also been neglected.

We were advised by residents of Amul as well as by highway maintenance foremen that there were two uncompleted bridges and one short tunnel on the upper end of this road that had to be finished before traffic could be routed over this road. It was also obvious that many repairs of flood damage had to be made as well as the roadbed given a general top finish. Engineer Hani estimated that it will cost 164 million rials to put this road in a first-class condition.

If this road was completed, it would shorten the distance to Tehran considerably for the people from the Amul, Babol, Babolsar, Mahmudabad and Anjelibe. They now have to travel either via Challus, which is 102 kilometers west of Amul or via Shahi which is 66 kilometers east of Amul. Most of this area is well cultivated. It raises considerable fresh vegetables and fruits which have to be transported to Tehran. The completion of the Haraz River road would be a great benefit to these people, and it should receive early consideration. It would be much freer of snow drifts and snow slides than the Challus Road.

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